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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/273,801	03/19/1999	HI-CHAN MOON	678-246	7593

7590 08/29/2003

DILWORTH & BARRESE
333 EARLE OVINGTON BOULEVARD
UNIONDALE, NY 11553

EXAMINER

ELALLAM, AHMED

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 08/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/273,801

Applicant(s)

MOON, HI-CHAN

Examiner

AHMED ELALLAM

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 6-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 6-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This communication is responsive to amendment filed on August 8, 2003. The amendment has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 6, 8, 10-14, 16, 18-20, 22, 24-26, 28, 30-32, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley, III et al, US (5,461,639) in view of Bruckert, US (5,751,763).

Regarding claim 1, with reference to figure 4, Wheatley discloses an apparatus comprising:

- a channel encoder for encoding input data I(D) in a frame unit to generate encoded data symbols;
- a power control bit generator (claimed side information generator for generating side information);
- a puncturer;
- an interleaver;
- a Walsh codes generator 401 for spreading;

Wheatley also discloses puncturing all the bits that are in locations $6n+3$ and $6n+5$ and that puncturing the symbols can be carried out on different locations of the sequence symbol. See column 5, lines 10-17. see column 8, lines 41-54.

Wheatley does not discloses a selector for generating a select control signal designating positions into which side information is inserted and side information inserter for inserting the side information between encoded data symbols in response to the select control signal.

However, with reference to Figure 7, Bruckert in the same field of endeavor discloses a power control bit (PCB) selector 705 in connection with a power control bit inserter 709 for inserting PCB into specific positions designated by (PCB) selector, see column 7, lines 62-67 and column 8, lines 1-20.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the PCB insertion designated position apparatus of Bruckert in the transmitter of Wheatley so that power control bits would be inserted in determined locations resulting in fast transmission power allocation.

Regarding claim 3, with reference to Figure 4, Wheatley discloses an interleaver for interleaving encoded data symbols and inserting PCB after interleaving punctured data streams.

The difference between Wheatley and Applicant is that Wheatley does not puncture symbols to be use for side information insertion.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use to insertion of PCB insertion mechanism of Bruckert

applied to the interleaved encoded symbols of Wheatley so that insertion of CPB would take place at the punctured positions.

Regarding claim 6, Wheatley discloses multiplexing of a power control bit with interleaved punctured symbols, See Figure 4. (Corresponding to the side information is a power control bit).

Regarding claim 8, Wheatley discloses puncturing all the bits that are in locations $6n+3$ and $6n+5$. See column 5, lines 10-17. (Corresponding to periodically designating a position into which side information is inserted at preset interval).

Regarding claims 10-14, 16, claims 10-14, 16 are method claims and having substantially the same limitations as the respective apparatus claims 1-6, thus they are subject to the same rejection.

Regarding claim 18, with reference to figure2, Wheatly discloses a transmitter comprising:

- a rate encoder, (reads on a cyclic redundancy check (CRC) generator for adding a CRC bit to input data in a frame unit; a tail bit generator for adding a tail bit to the output of the CRC generator; and an encoder for encoding the output of the tail bit generator at a preset coding rate), see table on column 6.
- a puncturer 205, for puncturing all the bits that are in locations $6n+3$ and $6n+5$ and that puncturing the symbols can be carried out on different locations of the sequence symbol. See column 5, lines 10-17.
- an interleaver 207; (claimed an interleaver for interleaving the output of the puncturer);

- a long PN generator 220 in combination with the XOR circuit 226, for generating a user specific sequence of symbols or unique user code. (corresponding to side information inserter).
- Walsh codes generator 250 for orthogonal-modulating of the output of the combiner 226, (Claimed an orthogonally modulating the output of information inserter).

Wheatly discloses combining the output of the interleaved punctured data with the a user specific sequence of symbols or codes but it does not explicitly disclose a selector for generating a select control signal designating a position into which side information is inserted and side information inserter for inserting the side information between encoded data symbols in response to the select control signal.

However, with reference to Figure 7, Bruckert in the same field of endeavor discloses a power control bit (PCB) (side information) selector 705 in connection with a power control bit inserter 709 for inserting PCB into specific positions designated by (PCB) selector, see column 7, lines 62-67 and column 8, lines 1-20.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the PCB insertion designated position apparatus of Bruckert applied to the side information insertion of Wheatly so that side information would be inserted in determined punctured locations.

Regarding claim 19, Wheatly discloses substantially all the limitations of claim 19, except it does not discloses puncturing the output symbols of the encoder in consideration of the number of side information.

However, with reference to Figure 7, Bruckert discloses inserting PCB at predetermined location in correspondence with punctured symbols, see column 7, lines 62-67 and column 8, lines 1-20.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Bruckert PCB insertion mechanism in Wheatly's system so that Wheatly's punctured locations would be subject to ancillary information insertion accordingly.

Regarding claim 20, Wheatly, with reference to figure 4, discloses the insertion of power control bit in punctured position.

Regarding claims 24 and 30, claim 24 is an apparatus claim that have the same limitations as the method claim 30, In addition claim 24 recites a transmitter and a receiver limitations, the transmitter limitations are the same as in claim 18 above, thus the transmitter limitations are subject to same rejection as indicated with regard to claim 18, and because the receiver limitations are the reverse steps of the transmitter limitations it follows that the receiver limitations are rejected by way of symmetry since a receiver must communicate with a transmitter using the reverse steps of the transmitter.

Regarding claims 25 and 31, claims 25 and 31 have the same scope of claim 19, thus they are subject to the same rejection.

Regarding claims 26 and 32, claims 26 and 32 have the same scope of claim 20, thus they are subject to the same rejection.

Regarding claim 22, Wheatley discloses puncturing all the bits that are in locations $6n+3$ and $6n+5$. See column 5, lines 10-17. (Corresponding to periodically designating a position into which side information is inserted at preset interval).

Regarding claims 28, 34, claims 28, 34, have the same scope of claim 22, thus they are subject to the same rejection.

2. Claims 7, 9, 15 and 17 are rejected under 35 U.S.C.103(a) as being unpatentable over Wheatley in view of Bruckert as applied to claim 3 above, and further in view of Tiedemann Jr. et al, US (6,396,867).

Regarding claim 7, Wheatley in view of Bruckert discloses designating positions for control power bit insertion in a deterministic manner as indicated above in claim 3, except they don't disclose pseudorandom designation of position into which side information is inserted.

However, Tiedemann in the same field of endeavor discloses pseudo-random selection of position into which power control bits are punctured in. See column 6, lines 23-38.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the pseudo-random position selection within a power group of Tiedemann instead of the deterministic PCB insertion (side information insertion) of Bruckert in view of Wheatley, so that puncturing can be carried out only when it is needed thus resulting in more available bandwidth.

Regarding claim 9, Bruckert in view of Wheatley discloses substantially the same limitations of claim 9 as indicated above with reference to claim 7, except they do not

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disclose using the least significant bits of a given number of a long code of a previous power control group.

However, Tiedemann discloses using the first 16 positions within a previous power group for PCB insertion. See column 6, lines 23-38.

Therefore, it would have been obvious to one ordinary person of skill in the art at the time of the invention to use the least significant bits of the long PN code of the power group of Tiedemann instead of the deterministic PCB (Power Control Bit) insertion of Bruckert in view of Wheatley so that non-ancillary information positions would be preserved for the main information.

Regarding claims 15, 17, claims 15 and 17 are method claims and having substantially the same limitations as the respective apparatus claims 7 and 9, thus they are subject to the same rejection.

3. Claims 36- 39 are rejected under 35 U.S.C.103(a) as being unpatentable over Wheatly in view of Bruckert as applied to claims 1 (and 10) above, and further in view of Tiedemann Jr. et al, US (6,396,867).

Regarding claims 36-39, Wheatly in view of Bruckert discloses substantially all the limitations of base claims 1 and 10, except they do not disclose inserting the side information in the frame within a delay interval and interleaved data upon completion of inserting signal.

However, Tiedemann, with reference to figure 7, shows a frame structure in which power control data and data locations are preserved in accordance with IS-95

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CDMA specifications. See column 6, lines 23-38. (Corresponding to claimed limitations of claims 36- 39).

Therefore it would have been obvious to an ordinary person of skill in the art at the time the invention was made to have the IS-95 frame format applied in the system of Weathly/Bruckert so that CDMA IS-95 can be implemented.

4. Claims 21, 23, 27, 29, 33, 35, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatly in view of Bruckert as applied to claim 18 above, and further in view of Tiedemann Jr. et al, US (6,396,867).

Regarding claim 21, Wheatly in view of Bruckert discloses designating positions for control power bit insertion in designated positions as indicated above with regard to claim 18, except they don't disclose pseudo-random designation of position into which PCB (side information) is inserted.

However, Tiedemann in the same field of endeavor discloses pseudo-random selection of position into which power control bits are punctured in. See column 6, lines 23-38.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the pseudo-random position selection within a power group of Tiedemann instead of the well designated PCB insertion (side information insertion) of Wheatly in view Bruckert, so that peak power transmission can be avoided.

Regarding claim 23, Wheatly in view of Bruckert discloses substantially the same limitations of claim 23 as indicated above with reference to claim 18, except they do not disclose using the least significant bits of a given number of a long code of a previous power control group.

However, Tiedemann discloses using the first 16 positions within a previous power group for PCB insertion. See column 6, lines 23-38.

Therefore, it would have been obvious to one ordinary person of skill in the art at the time of the invention to use the least significant bits of the long PN code of the power group of Tiedemann instead of the designated PCB (Power Control Bit) insertion of Wheatly in view of Bruckert so that power control bits would be inserted periodically in accordance with the system design.

Regarding claims 27 and 33, claims 27 and 33 have the same scope of claim 21, thus they are subject to the same rejection.

Regarding claims 29, 35, claims 29, 35, have the same scope of claim 23, thus they are subject to the same rejection.

Regarding claims 40 and 41, Wheatly in view of Bruckert discloses substantially all the limitations of base claim 18, except they do not disclose inserting the side information in the frame within a delay interval and interleaved data upon completion of inserting signal.

However, Tiedemann, with reference to figure 7, shows a frame structure in which power control data and data locations are preserved in accordance with IS-95

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CDMA specifications. See column 6, lines 23-38. (Corresponding to claimed limitations of claims 40 and 41).

Therefore it would have been obvious to an ordinary person of skill in the art at the time the invention was made to have the IS-95 frame format applied in the system of Weathly/Bruckert so that CDMA IS-95 can be implemented.

Response to Arguments

5. Applicant's arguments filed August 8, 2003 have been fully considered but they are not persuasive.

The 112 2nd rejections had been withdrawn.

Reference to Bender, US (6,366,778) had been withdrawn.

Applicant argue that neither Wheatley nor Bruckert discloses "a puncturer for puncturing encoded data symbols generated from the puncturer as a function of a number of symbols of the side information, the positions of the punctured encoded data symbols chosen to lessen a channel degradation". Examiner disagree, Applicant is referred to the rejection indicated above. In addition Examiner note that an amendment to claims 1, and 10 as well as the other independent claims does not overcome the teaching of Wheatly, or Bruckert and Tiedemann, because the added limitation of "lessening the channel degradation" is implicitly taught by Wheatley. Wheatley discloses punctured specific locations not adjacent to each other, (see column 5, lines 10-17), interleaving to spread adjacent symbols to aid recovery, and in addition to that, repeating symbols (Rate $\frac{1}{2}$ encoding), all these factors are utilized to lessen channel

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degradation. Wheatley also discloses Inserting the PCB with the punctured/interleaved/encoded data to maintain the data rate at 19.2 Kbs, that implies that puncturing is carried out in accordance with the number or PCB/ or side information to be inserted. See column 8, lines 24-40. Examiner concludes that the prior art used in rejecting the claims is proper.

Conclusion


6. The Finality has been withdrawn.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED ELALLAM whose telephone number is (703) 308-6069. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou Hassan can be reached on (703) 305-4744. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

AHMED ELALLAM
Examiner
Art Unit 2662
26 August 2003


JOHN PEZZLO
PRIMARY EXAMINER